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Position: Scientist. 2010 to Present

Past Positions: President, *Carli, Inc.* 1995 to 2010
Senior Research Fellow. *University of Massachusetts.* 1992-2008.
Research Associate: *University of Massachusetts.* 1987-1992
Senior Design and Software Engineer. Energoprojekt, Yugoslavia. 1983-1987

Degrees: Ph.D., Mechanical Engineering, 1992, *University of Massachusetts,* Amherst, MA
B.Sc., Mechanical Engineering, 1982, *University of Belgrade*, Yugoslavia

Selected Professional Experience and Consulting:

Research in thermal and optical performance of windows. 2010 to present. Deputy Leader, Windows and Envelope Materials Group.

Software development and deployment. Software tools for building energy performance. 1995 to 2010. Chief software architect. Carli, Inc.

Measurements and computer simulations services to over 100 fenestration and building materials manufacturers. 2000 to 2010. Certified simulator. Carli, Inc.

Design and R&D work for manufacturers of building products. 1992 to 2010. Principal Investigator. (Umass and Carli)

Research of the thermal performance of fenestration systems – several research projects. *National Fenestration Rating Council*. 2002 to 2010. Principal Investigator. (Umass and Carli)

International technical assistance to transitional economy countries in building energy efficiency. *U.S. Department of Energy.* 2001 to 2008. Consultant. (Umass and Carli)

Energy Performance of Skylights. *AAMA Skylight Collaborative*. 2005 to 2006. Consultant.

Fenestration Thermal Performance Research, *U.S. Department of Energy*. 1999 to 2005. Principal Investigator (Umass).

Evaluations of energy related inventions. *National Institute of Standards and Technology, Office of Energy-Related Inventions*, Gaithersburg, MD. 1993 to 1996. Consultant. (Umass).

Fenestration Thermal Performance Research, *U.S. Department of Energy*. 1987 to 1999. Computer modeling and measurements of heat transfer in fenestration systems. Independent investigator. (Umass)

Energy conservation in industrial buildings and processes. *University of Massachusetts*, 1987 to 1989. Energy Auditor. (Umass)

Computer Aided Engineering Design in Buildings, *Energoprojekt-Energodata Co.*, Belgrade, Yugoslavia, 1983 to 1987. Design Engineer and Software Developer.

Professional and Scientific Organizations:

ASME, American Society of Mechanical Engineers, Member, 1989 to present.

ASHRAE, American Society for Heating, Refrigerating, and Air Conditioning Engineers, Inc., Member, 1985 to present.

ASTM, American Society for Testing and Materials, Member, 1996 to present

NFRC, National Fenestration Rating Council, Associate Member, 1995 to present

ISO, International Standards Organization, Member of TC163/WG2, WG11, and WG14, 1999 to present

IEA, International Energy Agency, U.S.A. representative and co-leader of project A1 for the Task 27.

Honors and Awards:

Distinguished Teaching Award - Honorable Mention, Mechanical Engineering Department, University of Massachusetts, 1993.

ASHRAE Grant-in-Aid, American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., 1989.

ASHRAE Best Paper Award for 1984, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1985.

Annual October Award for scientific work in 1984, Parliament of the City of Belgrade, 1985.

Papers and Publications:

Refereed Journal Papers:

Todorovic, B; Curcija, D. 1982. "Cooling Loads from Solar Radiation Through Partially Shaded Windows Taking Heat Storage into Account". *ASHRAE Transactions*, Vol. 88, Part II, June 1982.

Todorovic, B; Curcija, D. 1984. "Calculative Procedure for Estimating Cooling Loads Influenced by Window Shadowing, Using Negative Cooling Load Method". *ASHRAE Transactions*, Vol. 90, Part II, June 1984.

Todorovic, B; Curcija, D. 1985. "Calculation of Cooling Loads in Buildings from Solar Radiation Using Negative Cooling Load Method". *KGH Journal*, Belgrade, Yugoslavia, 1985.

Curcija, D.; Ambs, L.L.; Goss, W.P. 1989. "Comparison of European and North American Window U-Value Calculation Procedures". *ASHRAE Transactions*, Vol. 95-1, January 1989.

Curcija, D.; Goss, W.P. 1993. "Two Dimensional Natural Convection Over the Isothermal Indoor Fenestration Surface - Finite Element Numerical Solution." *ASHRAE Transactions*, Vol. 99, Part I, January 1993.

Curcija, D.; Goss, W.P. 1994. "Two-Dimensional Finite Element Model of Heat Transfer in Complete Fenestration Systems." *ASHRAE Transactions*, Vol. 100, Part II, June 1994.

Curcija, D.; Goss, W.P. 1995. "Two-Dimensional Forced Convection Perpendicular to the Outdoor Fenestration Surface - FEM Solution." *ASHRAE Transactions*, Vol. 101, Part I, January 1995.

Refereed Journal Papers (Cont.):

Zhao, Y.; Curcija, D.; Goss, W.P. 1996. "Condensation Resistance Validation Project - Detailed Computer Simulations Using Finite Element Methods" *ASHRAE Transactions*, Vol. 102, Pt. 2. June 1996.

Zhao, Y.; Curcija, D.; Goss, W.P. 1997. "Prediction of the Multicellular Flow Regime of Natural Convection in Fenestration Glazing Cavities." *ASHRAE Transactions*, Vol. 103, Pt. 1. January, 1997.

Griffith, B.; Curcija, D.; Turler, D.; Arasteh, D. 1998. "Improving Computer Simulations of Heat Transfer For Projecting Fenestration Products: Using Radiation View Factor Models." *ASHRAE Transactions*, Vol. 104, Pt. 1. January, 1998.

Arasteh, D., Finlayson, E.U.; Curcija, D.; Baker, J; Huizenga, C. 1998. "Guidelines For Modeling Projecting Fenestration Products." *ASHRAE Transactions*, Vol. 104, pt. 1. January, 1998.

Huizenga, C.; Arasteh, D.; Finlayson, E.U.; Mitchell, R.; Griffith, B,; Curcija, D. 1999. "Teaching Students About Two-Dimensional Heat Transfer in Building Components, Equipment, and Appliances Using THERM 2.0." *ASHRAE Transactions*, Vol. 105, Pt. 1. January, 1999.

Zhao, Y.; Curcija, D.; Goss, W.P. 1999. "Convective Heat Transfer Correlations for Fenestration Glazing Cavities: A Review." *ASHRAE Transactions*, Vol. 105, Pt. 2. June, 1999.

Gustavsen, A.; Kohler, C.; Arasteh, D.; Curcija, D. 2004. "Two-Dimensional Computational Fluid Dynamics and Conduction Simulations of Heat Transfer in Window Frames with Internal Cavities - Part 1: Cavities Only". *ASHRAE Transactions*, Vol. 110, Pt. 1. January, 2004.

Gustavsen, A.; Arasteh, D.; Kohler, C.; Curcija, D. 2005. "Two-Dimensional Conduction and CFD Simulations of Heat Transfer in Horizontal Window Frame Cavities". *ASHRAE Transactions*, Vol. 111, Pt. 1. February, 2005.

Stocki, M; Curcija, D.; Bhandari, M. 2007. "The Development of Standardized Whole Building Simulation Assumptions for Energy Analysis for a Set of Commercial Buildings". *ASHRAE Transactions*. Vol. 113, Pt. 1. January 2007.

Rubin, M.; Jonsson, J.; Kohler, C.; Klems, J.; Curcija, D.; and N. Stojanovic "Bidirectional Optical Properties of Slat Shading: Comparison Between Monte-Carlo And Radiosity Methods." *Solar Energy.* 2007.

Gustavsen, A.; Arasteh, D.; Jelle, B.P.; Curcija, D.C.; Kohler, C. 2008. "Developing Low-conductance Window Frames: Capabilities and Limitations of Current Window Heat Transfer Design Tools State-of-the-Art Review". *Journal of Building Physics*. 2008, Vol. 32, pp 131.

Refereed Conference Papers:

Curcija, D.; Goss, W.P. 1995. "Three-Dimensional Finite Element Model of Heat Transfer in Complete Fenestration Systems" *Window Innovations Conference '95,* Toronto, Canada, June 1995.

Arasteh, D.; Finlayson, E.; Rubin, M.; Sadlier, J.; Huizenga, C.; and Curcija, D. 1995. "Recent Technical Improvements to the WINDOW Computer Program" *Window Innovations Conference '95,* Toronto, Canada, June 1995.

Refereed Conference Papers (Cont.):

Curcija, D.; Goss, W.P. 1995. "New Correlations for Convective Heat Transfer Coefficient on Indoor Fenestration Surfaces - Compilation of More Recent Work." *ASHRAE/DOE/BTECC Conference, Thermal Performance of the Exterior Envelopes of Buildings VI*, 1995.

Finlayson, E.; Arasteh, D.; Sadlier, J.; Sullivan, R.; Huizenga, C.; Curcija, D.; and Beall, M. 1995. "Advancements in Thermal and Optical Simulations of Fenestration Systems: The Development of WINDOW 5." *ASHRAE/DOE/BTECC Conference, Thermal Performance of the Exterior Envelopes of Buildings VI*, 1995.

Gatland, S.D.; Goss, W.P.; and Curcija, D. 1997. "The Design and Calibration of a Research Hot Box." ASTM Conference Proceedings, Ottawa, June 1997.

Zhao, Y.; Curcija, D.; and Goss, W.P. 1997. "A New Set of Correlations for Predicting Convective Heat Transfer in Fenestration Glazing Cavities Based on Computer Simulations Using Finite Element Method." CLIMA 2000 conference in Brussels, Belgium. September 1997

Zhao, Y; Curcija, D.; Power, J.P.; and Goss, W.P. 1998. "Improved Heat Transfer Correlations For Quantifying Laminar Natural Convection Across Fenestration Glazing Cavities." *Thermal Performance of Building Envelopes VII*, Clearwater, FL. December, 1998.

Power, J.P. Goss, W.P.; and Curcija, D. 1998. "A Comparison Between Two-Dimensional Laminar and Turbulent Flow Heat Transfer Models with Experimental Results for Transition Regime Condition in Tall Glazing Cavities." *Thermal Performance of Building Envelopes VII*, Clearwater, FL. December, 1998.

Curcija, D.; Zhao, Y.; and Goss, W.P. 1998. "The Effect of Realistic Boundary Conditions in Computer Modeling of Condensation Resistance for Fenestration Systems." *Thermal Performance of Building Envelopes VII*, Clearwater, FL. December, 1998.

Branchaud, T; Curcija, D.; Goss, W.P. 1998. "Local Heat Transfer in Open Frame Cavities of Fenestration Systems." *Thermal Performance of Building Envelopes VII*, Clearwater, FL. December, 1998.

Huizenga, C.; Arasteh, D.; Finlayson, E.; Mitchell, R.; Griffith, B.; and Curcija, D. 1999. "THERM 2.0: A Building Component Model for Steady-State Two-Dimensional Heat Transfer." *Building Simulation '99*. Kobe, Japan. August, 1999.

Arasteh, D.; Mitchell, R.; Kohler, C.; Huizenga, C.; and Curcija, D. 2001. "Improving Information Technology to Maximize Fenestration Energy Efficiency." *Thermal Performance of Building Envelopes VIII*, Clearwater, FL. December, 2001.

Curcija, D.; Arasteh, D.; Huizenga, C.; Kohler, C.; Mitchell, R., and Bhandari, M. 2001. "Analyzing Thermal Performance of Building Envelope Components Using 2-D Heat Transfer Tool with Detailed Radiation Modeling." *Building Simulation '01*. Rio De Janeiro, Brasil. August, 2001.

Shah, B.; Curcija, D.; Taylor, S. 2001. "Rating and Labeling of Energy Performance of Windows as a Tool for Promoting Energy Efficiency Practices in Buildings" *Building Simulation '01*. Rio De Janeiro, Brasil. August, 2001.

Curcija, D.; Shah, B. 2001. "Labeling and Certification Procedures for Energy Rating in North America and The Impact on Market for Energy Efficient Products". *XXV Solar Conference*. San Luis Potosi, Mexico. October 2001.

Refereed Conference Papers (Cont.):

Powels, R.; Curcija, D.; Kohler, C. 2002. ”Solar Absorption in Thick and Multilayered Glazings”. The World Renewable Energy Congress 2002. Cologne, Germany. August 2002.

Curcija, D.; Bhandari, M.; Manteghi, M.; and Shah, B. 2004. ”Component Modeling Methodology for Predicting Thermal Performance of Non-Residential Fenestration Systems”. *Thermal Performance of Building Envelopes IX*, Clearwater, FL. December, 2004.

Curcija, D.; Dukovski, I.; Velthuis, H.; Fairman, J.; and Doll, M. 2005. ”Real-time simulations of the durability of Insulating Glass Units”. *10DBMC International Conference on Durability of Building Materials and Components*. Lyon, France. April 2005.

Curcija, D.; Bhandari, M.; and Jacobson, M. 2005. “Simulation of the radiative performance of laminated glass”. *The International Society for Optical Engineering Proceedings.* August, 2005. San Diego, CA.

Bhandari, M.; and Curcija, D. 2006. “Investigation of the Effects of Fenestration Systems on the Energy Performance of a Typical Commercial Building”. *SimBuild 2006 Conference*. MIT, Cambridge. July, 2006.

Stojanovic, N.; and Curcija, D. 2006. “A Method For Calculation of Bi-Directional Solar Properties of A Venetian Blind”. *BauSIM 2006 Conference*. October, 2006.

Other Papers and Publications:

Todorovic, B.; Curcija, D.; and Zivkovic, B. 1982. "Solar Radiation Through Glass Surface of Building". *New Sources of Energy*, RZNO Srbije, Belgrade, 1982.

Curcija, D. 1992. *Three-Dimensional Finite Element Model of Overall Night Time Heat Transfer Through Fenestration Systems*. Ph.D. Dissertation, University of Massachusetts, Amherst, MA. 1992.

Finlayson, E.; Arasteh, D.; Huizenga, D.; Curcija, D.; Beall, M.; and Micthell, R. 1996. “THERM 1.0: A PC Program for Analyzing Two-Dimensional Heat Transfer Through Building Products.” Windows and Daylighting Group, Lawrence Berkeley National Laboratory, Berkeley, CA. April, 1996.

Finlayson, E.; Mitchell, R. Arasteh, D.; Huizenga, D.; and Curcija, D. 1998. “THERM 2.0: A PC Program for Analyzing Two-Dimensional Heat Transfer Through Building Products.” Windows and Daylighting Group, Lawrence Berkeley National Laboratory, Berkeley, CA. June, 1998.

Curcija, D.; Bhandari, M. 2002. *”*Role of Computer Simulation in Window Ratings and Design*”. Energy Efficient Windows and Building Design Conference and Workshop.* New Delhi, India*.* November 2002*.*

Curcija, D. 2004. *“*New Rating System for Non-Residential Fenestration Prod*ucts”. Energy Efficient Windows - 4 Conference.* Krasnoyarsk, Russia. September 2004.

Curcija, D.C.; Collins, M. duPont, W.C; Hogan, J.F.; Klems, J.H.; Laouadi, A.; McCluney, W.R.; and Shah, B.V. 2005. "Chapter 27: Fenestration." *ASHRAE Handbook of Fundamentals*. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta GA. June 2005.

Shah, B.V.; Curcija, D.C.; and Bhandari, M.S. 2007. “Role of Building Simulation to Quantify The Energy Savings From Advanced Glazing Systems”. *Glass Performance Days China 2007*.

Other Papers and Publications (Cont.):

Shah, B.V.; Bhandari, M.S.; and Curcija, D.C. 2008. “A study of energy performance calculation comparison of fenestration products using environmental conditions and procedures used by various country codes”. *Glass Performance Days China 2008*.